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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/827,317 | 04/20/2004 | Hidekazu Moriyama | 119294 | 2578 |
| 25944 | 7590 | 06/22/2006 | EXAMINER | |
| OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320 | | | SELLMAN, CACHET I | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1762 | |

DATE MAILED: 06/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-------------------------------|------------------------------------|--|
| Office Action Summary | Application No. 10/827,317 | Applicant(s) MORIYAMA, HIDEKAZU | |
| | Examiner Cachet I. Sellman | Art Unit 1762 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
 4a) Of the above claim(s) 6 and 7 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-5, drawn to a process, classified in class 427, subclass 77.
- II. Claims 6-7, drawn to a device, classified in class 349 subclass 1+.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the electro-optical device can be formed using a materially different process such as one that does not require the use of purified water with a solvent that dissolves the solvent of the functional solution.
3. Because these inventions are independent or distinct for the reasons given above and have acquired a separate status in the art in view of their different classification, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Steven Allis on March 7, 2006 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-5. Affirmation of this election must be made by applicant in replying to this Office action. Claims 6-7 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

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5. The disclosure is objected to because of the following informalities:

- Page 18 [0072] of the specification states “as shown in Fig. 7e and 7f” should read “Fig. 7a and 7b”.
- Page 19 [0075] of the specification states “as shown in Fig. 7g” should read “Fig. 7c”
- Page 19 [0077] of the specification states “as shown in Fig. 7h” should read “Fig. 7d”

Appropriate correction is required.

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

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7. Claims 1, 4, and 5 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 6, 11, and 12 of copending Application No. 10/827,426 in view of Kiguchi et al. (US 6599582 B2). Claim 6 of the application no. '426 discloses all of the limitations of claim 1 of the current application except for the limitation of forming banks and disposing the droplets into the grooves between the banks with the liquid droplet ejection head. Kiguchi et al. discloses that it is known in the art to form banks and dispose the liquid within the grooves in order to form a film pattern on a substrate therefore it would have been obvious to one of ordinary skill during the time to form banks and dispose the liquid in the grooves to form a pattern. Claims 11 and 12 of '426 disclose the limitations of claims 4 and 5 of the current application.

This is a provisional obviousness-type double patenting rejection.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kiguchi et al. (US 6599582 B2) in view of Shibata et al. (US 5347713), Edgett et al. (US 5683520) and Watanabe et al. (US 4966480).

Kiguchi et al. discloses a process for forming patterns on a substrate using an inkjet system, which allows a fluid to be ejected onto a substrate (abstract). The method include filling the liquid droplet ejection head and a conduit to feed the functional solution to the liquid droplet ejection head; forming banks corresponding to the film pattern on the substrate and disposing the liquid droplets into grooves between the banks with the liquid droplet ejection head.

Kiguchi et al. does not disclose filling the passage with purified water; or filling the passage with a solvent dissolving both a solvent contained in the solution and the purified water; or filling the passage with the solvent contained in the functional solution as required by **claim 1**.

Shibata et al. discloses a process for cleaning the ink passage of an ink jet head by introducing a liquid into the ink passage (abstract) in order to remove any deposits in the ink passage which can clog the discharge opening during the use of the ink jet head and can cause unstable or poor ink discharge (column 2, lines 24-34). Shibata et al. discloses that the liquid can be an organic solvent such as acetone, isopropyl alcohol or the like, alkali solution, detergent solution or pure water (column 2, lines 6-12).

Edgett et al. discloses a process for cleaning material that are used to store and deliver ink to an ink jet head to reduce nozzle blocking problems and reduction of surface tension in the ink (abstract). The material should be washed with softened (purified)

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water and isopropanol in order to ensure reduction of antistats and clogging problems (abstract).

Watanabe et al. discloses a process for washing the ink passage within a writing instrument (abstract) in order to remove dried and solidified ink (column 3, lines 24-30). Watanabe et al. further discloses that the liquid used depends on the instrument parts and the ink that is used. The liquid must be able to dissolve the ink. Suitable solvents include isopropanol (column 4, lines 19-68 – column 5, lines 1-2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of Kiguchi et al. to include the steps of cleaning the ink passage with a liquid that is able to dissolve the ink as taught by Watanabe et al. and where the solvents can be purified water and isopropanol as taught by Shibata et al. and Edgett et al. One would have been motivated to do so because Kiguchi et al. teaches a process for forming a pattern using an ink jet head with a functional liquid; Shibata et al. teaches the importance of cleaning the ink passage of an ink jet head in order to remove deposits which can cause clogging and poor ink discharge and Shibata et al teaches that the cleaning solution can be an organic solvent such as isopropyl alcohol and pure water; Watanabe et al. teaches the importance of cleaning an ink passage with a solvent that can dissolve the ink in order to remove dried and solidified ink and Edgett et al. further teaches the importance of cleaning materials that are used to deliver inks in ink jet printing devices with purified water and isopropyl

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alcohol in order to prevent clogging therefore one would have a reasonable expectation of dispensing liquid droplets onto a substrate without poor ink discharge.

After cleaning the ink jet head, it is filled with the functional liquid in order to form a pattern by disposing liquid droplets of a functional solution on a substrate therefore the passage is filled with the solvent contained in the functional solution as required by **claim 1**. In regards to **claim 3**, Watanabe et al. teaches that a solvent that is the same as the solvent in the ink can be used therefore one would fill the passage with a solvent found in the functional liquid then fill the passage with the functional liquid in order to form a pattern.

10. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kiguchi et al. (US 6599582 B2) in view of Shibata et al. (US 5347713), Edgett et al. (US 5683520) and Watanabe et al. (US 4966480) as applied to claim 1 above, and in further view of Nakamura (JP 11-001046A) ,Fujioka et al. (JP 2000094707A) and Yano et al. (US 6342105 B1).

The teachings of Kiguchi et al. in view of Shibata et al., Edgett et al. and Watanabe et al. as applied to claim 1 are as stated above.

Kiguchi et al. in view of Shibata et al, Edgett et al. and Watanabe et al. does not teach filling a liquid ejection head with a predetermined storage solution as required by **claim 2**.

Nakamura discloses the use of a storage solution for preserving the inside of a ink jet head when being stored in order to make the initial introduction of ink perform smoothly without generating air bubbles in the ink [0003].

Fijioka discloses filling the ink jet head with an introductory liquid such as a water-soluble organic solvent in order to fill the passage with ink without leaving air bubbles in an ink-jet head which can result in non satisfactory performance [0004-0005].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to store the ink jet head of Kiguchi et al. in view of Shibata et al., Edgett et al. and Watanabe et al. with a water-soluble organic solvent as taught by Nakamura and Fijoka. One would have been motivated to do so because both Nakamura and Fijioka teach that filling the head with the liquid will reduce the generation of bubbles in the ink as well as improve the performance of the ink jet head therefore one would have a reasonable expectation of success in forming the film pattern.

Yano et al. discloses a method for restoring an ink jet head after being stored. Yano et al. discloses a process where an ink jet is stored for a long-term and has a storage liquid mixed with the ink during storage however this can result in clogging of the ink jet head (column 1, lines 46-65).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of Kiguchi et al. in view of Shibata et al., Edgett et al., and Watanabe et al. to clean the ink passage after storing the ink jet head with a storage solution. One would have been motivated to do so because Yano et al. discloses that storing the ink jet head with a storage solution can result in clogging of the ink jet head and Kiguchi et al. in view of Shibata et al., Edgett et al., and Watanabe et al. disclose a process to clean an ink jet head to rid of dried ink (clogging) therefore one would have a reasonable expectation of success in disposing a liquid onto a substrate after being stored for a long period of time.

11. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kiguchi et al. in view of Shibata et al., Edgett et al., and Watanabe et al. as applied to claim 1 above, and in further view of Hashimoto et al (US 2003/0030689 A1).

The teachings of Kiguchi et al. in view of Edgett et al., and Watanabe et al. as applied to claim are as stated above.

Kiguchi et al. in view of Edgett et al., and Watanabe et al. does not teach that the functional solution exhibits electrical conductivity by thermal or optical treatments as required by **claim 4**.

Hashimoto et al. discloses a process of forming a film pattern by disposing liquid droplets of a functional solution on a substrate where the pattern is good for exhibiting a function such as electric conduction (abstract). Hashimoto et al. also discloses that the ejected liquid is transformed into a functional film by heat treatment [0017].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of Kiguchi et al. in view of Edgett et al., and Watanabe et al. to include the step of heating the liquid as taught by Hashimoto et al. One would have been motivated to do so because both disclose processes for forming a film pattern on semiconductor devices and Hashimoto et al. discloses the additional step of heating in order to allow the film to exhibit electrical conductivity therefore one would have a reasonable expectation of success in forming the pattern.

The process is performed to form semiconductor devices as required by **claim 5**.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cachet I. Sellman whose telephone number is 571-272-

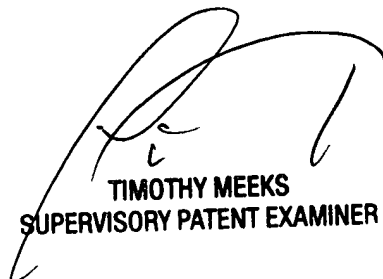
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0691. The examiner can normally be reached on Monday through Friday, 7:00 - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Cachet Sellman
Patent Examiner
AU 1762



TIMOTHY MEESKS
SUPERVISORY PATENT EXAMINER